

**Amendments to the Drawings:**

The attached Replacement Sheet of drawings includes changes to Figures 1 and 2. This sheet replaces the original Figures 1 and 2. An annotated sheet also is attached to show the changes made. Approval by the Examiner is respectfully requested.

## **REMARKS**

### **Status**

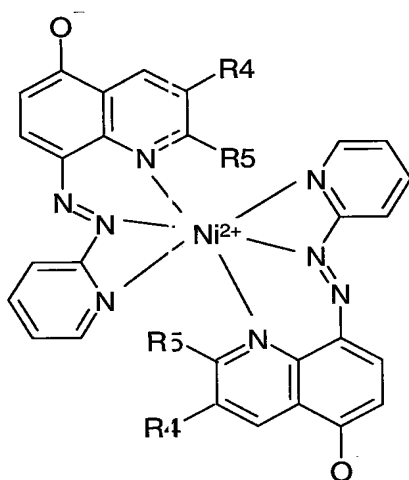
This Amendment is responsive to the Office Action dated June 5, 2007, in which Claims 1-11 were rejected. Claim 1 has been amended; Claims 12-33 have been withdrawn from consideration. Accordingly, Claims 1-11 are pending in the application, and are presented for reconsideration and allowance.

The basis for the amendment to Claim 1 is found on page 13, line 9 to page 14 line 8 of the specification and Claim 1 as originally filed.

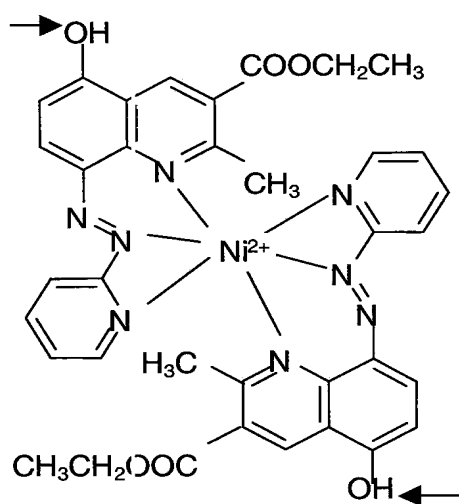
### **Claim Rejection - 35 USC 103**

Claims 1-5 and 9-11 stand rejected under 35 USC 103(a) as being unpatentable over EP 1127707 A1 (*Chen et al.*). The Examiner asserts that the “only difference between the compound of *Chen et al.* and the compound of the instant application is the ionized and neutral form of the hydroxyl substitution on the aromatic ring attached to pyridine ring of the compounds.” The Examiner asserts that *Chen et al.*’s hydroxyl group would be in ionized form based on the basic pH of the solution. The Examiner states that the dye of *Chen et al.* “at the basic pH either anticipates or are (*sic*) obvious over the compounds of Formula (I) or (II) of the instant application, and the low fluorescent property of the dye would also be obvious as the dyes are the same or very similar.” This rejection is respectfully traversed.

*Chen et al.* discloses a coating composition comprising a dye-containing polymeric latex, gelling agent and nickel metallized dye. However, *Chen et al.* fails to teach or suggest a low fluorescing dye of Formula (I) or (II) as claimed by the instant invention. For example, Formula (II) of instant application appears as follows:



while the dye of *Chen et al.* has the following structure:



As can be seen, the two illustrated structures are different, as also is true regarding claimed Formula (I). *Chen et al.* fails to teach the claimed limitations of the instant invention. The reference fails to disclose compounds with structures corresponding to Formula (I) or (II) of the instant application.

The present invention provides a microarray that is less costly and easier to prepare than those previously disclosed by *Chen et al.*, and further can be used in a colored microarray device wherein green light absorbance is desired to be maximized and fluorescence of the dye imbibed in the colored polystyrene microsphere bead is desired to be minimized. The reference is silent with respect to the control of fluorescence levels in a microsphere and therefore, provides no likelihood of success in the use or identification of a low fluorescing dye of

Formula (I) or (II). There are a very large number of compounds known to those skilled in the art, which may be utilized as dyes. There are, further, a tremendous number of types of microspheres. Microarray systems are very complex and unpredictable and the fact that two technologies are independently successful does not indicate that the combination will be useful or beneficial. As indicated in the present specification:

there are no general guideline parameters with which a colorant scientist may predict the fluorescence of any given colorant material. Therefore, the colorant scientist must undertake an empirical approach to the discovery of colorant materials that are non-fluorescent. It appears that dye materials containing a specific halogen functionality are particularly likely to possess the property of very low fluorescence. Thus, the dyes of this invention have been found to have good solubility in the organic solvents required for bead coloration, high extinction, and remarkably low fluorescence when imbibed in a polystyrene microsphere bead. (pg. 5, line 28 - pg. 6, line 5).

Furthermore, the reference lacks specificity. *Chen et al.* discloses that a broad range of water-insoluble dyes may be used such as oil, disperse, solvent, or metal-complex dyes (Para. [0010]). The instant invention illustrates that Comparative dyes 1-4 (Page 21, Table 1) have high fluorescence values, and are outside the scope of the claimed invention. Specifically, Comparative dye 3 (page 21, Table 1) is a disperse azo dye that is disclosed by *Chen et al.* as an acceptable water-insoluble dye to be utilized by the reference (Para. [0010]). By contrast, disperse azo dyes are inapplicable for use in the instant invention as they demonstrate a high fluorescence value as demonstrated by Comparative dye 3. *Chen et al.* fails to teach any distinction between low fluorescing metal-complex dyes as claimed by the instant invention and high fluorescing disperse dyes, as in Comparative dye 3.

Referring to the Examiner's assumption that the dye disclosed in *Chen et al.* would be the same as the instant invention at a pH of 8.0, there is no indication that adjusting the pH would yield the dyes of the instant invention. In fact, the reference specifically discloses a solution at a pH of 8.0 and dyes that are distinct from those of the instant invention (Paras. [0025] – [0026]). There is no indication that merely modifying the pH of the solution would yield a dye as claimed by the instant invention. Furthermore, the person of ordinary skill would

lack any motivation to modify the dyes of *Chen et al.* to arrive at the dyes of the instant invention as suggested by the Examiner. Accordingly, Applicants respectfully submit that Claims 1 and 2 are patentable.

Claims 3-5 and 9-11 are dependent on Claim 1, and therefore include all the features thereof. For the reasons set forth above with regard to Claims 1 and 2, Claims 3-5 and 9-11 are also believed to be patentable. Therefore, it is respectfully requested that this rejection be reconsidered and withdrawn.

### **Claim Rejection - 35 USC 103**

Claims 1-11 are rejected under 35 USC 103(a) as being obvious over US Patent No. 5,334,575 (*Qiao et al.*) (*sic*) in view of EP 1127707 A1 (*Chen et al.*). Applicants have assumed in this response that the Examiner meant to refer to US Patent 6,916,620, rather than 5,334,575 to *Noonan et al.* The Examiner asserts that *Qiao et al.* discloses “a microarray coating composition comprising a gelling agent ... and microsphere (beads) containing magenta dye ....” The Examiner asserts that *Chen et al.* teaches a nickel metalized dye that is very similar or the same as the dye of the instant application. The Examiner states that it would have been obvious “to substitute equivalent magenta dye of *Chen et al.* in the coating composition of *Qiao et al.* with the expectation of obtaining a microarray coating composition with a more stable dye.” This rejection is respectfully traversed.

Applicants appreciate the Examiner’s suggestions regarding four ways to remove *Qiao et al.* as prior art. However, in view of the following remarks showing the patentable distinctions of the invention over this combination of references, Applicants are holding analysis of the Examiner’s suggestions in abeyance.

The references fail to teach or suggest the instant invention. *Qiao et al.* discloses an assay method relying on the detection of fluorescence or chemiluminescence (Abstract) and specifically exemplifies a Dye 1 in col. 10, lines 5-20, utilized in *Qiao et al.*’s inventive Formulation 1 (col. 9, lines 6-34). Dye 1 is equivalent to Comparative dye 4 of the present invention, which as disclosed on pg. 21 in Table 1 has a high fluorescence emission. As discussed

above, *Chen et al.* fails to teach or suggest all of the claimed limitations of the instant invention. Neither reference, alone or in combination, teaches or suggests low fluorescing dyes of Formula (I) or (II) as claimed in the instant application.

The references are silent with respect to the control of fluorescence levels in a microsphere and therefore, provide no likelihood of success in the use or identification of a low fluorescing dye of Formula (I) or (II). As discussed above, there are a very large number of compounds known to those skilled in the art, which may be utilized as dyes and at most, the Examiner has set forth an argument that it would be obvious to try the combination of the cited references. Therefore, there is no reasonable expectation of success found in any combination of the cited reference.

Additionally, absent some teaching, suggestion, or incentive supporting the combination, obviousness cannot be established. Since such a showing is absent, it appears that the Examiner has used Applicant's teaching to hunt through the prior art for the claimed elements and combine them as claimed by Applicant. Since neither reference suggests such a combination, obviousness cannot be supported.


Claims 2-11 are dependent on Claim 1, and therefore includes all the features thereof. For the reasons set forth above with regard to Claim 1, Claims 2-11 are also believed to be patentable. Therefore, it is respectfully requested that this rejection be reconsidered and withdrawn.

### **Summary**

Should the Examiner consider that additional amendments are necessary to place the application in condition for allowance, the favor is requested of a telephone call to the undersigned counsel for the purpose of discussing such amendments.

For the reasons set forth above, it is believed that the application is in condition for allowance. Accordingly, reconsideration and favorable action are respectfully solicited.

Respectfully submitted,

  
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Attachments: Annotated Figures 1 and 2  
Replacement Sheet with Figures 1 and 2